

### 3.1 All cancer sites

Table 3.1.1

Overview of key epidemiological parameters for Germany, ICD-10 C00 – C97 without C44

	2009		2010		Prediction for 2014	
	Men	Women	Men	Women	Men	Women
Incident cases	253,100	228,500	252,400	224,900	264,700	236,200
Crude incidence rate <sup>1</sup>	630.6	547.3	629.4	539.9	666.5	573.3
Standardised incidence rate <sup>1,2</sup>	453.2	357.4	445.0	349.1	436.8	356.2
Median age at diagnosis	69	69	69	69		
Deaths	116,381	99,152	117,855	100,403		
Crude mortality rate <sup>1</sup>	290.0	237.5	293.9	241.0		
Standardised mortality rate <sup>1,2</sup>	201.4	128.6	198.7	127.9		
5-year prevalence	759,500	743,200	770,000	753,200		
Absolute 5-year survival rate (2009-2010) <sup>3</sup>			52 (45-56)	59 (55-63)		
Relative 5-year survival rate (2009-2010) <sup>3</sup>			61 (54-66)	67 (62-71)		

<sup>1</sup> per 100,000 persons <sup>2</sup> age-standardised (European standard) <sup>3</sup> in percentages (lowest and highest value of the included German federal states)

#### Epidemiology

‘All cancer sites’ refers here to all malignant neoplasms including lymphomas and leukaemias. In line with normal international practice, non-melanoma skin cancers (white skin cancer) are not included in the above. Estimates regarding the frequency of this widespread yet seldom life-threatening disease can be found in chapter 3.28.

According to our estimates a total of approximately 477,300 new cases of cancer were diagnosed in Germany in 2010. Of these, approximately 252,400 were in men and 224,900 in women.

Just over half of all cases relate to the mammary gland (71,000), the prostate (65,800), the bowel (62,400) or the lungs (52,100).

Between 2000 and 2010 the number of new cancer cases increased among men by around 21 % and in women by 14 %. The decisive factor influencing this was the changing demographic structure of the population (increase in the proportion of older people), which was more pronounced among men than women. The development in age-standardised incidence rates indicates that without these changes there would have been no increase in incidence figures among men and only a slight increase of around 7 % in women. The latter can be explained to a significant extent by the changes in breast cancer, where the introduction of mammography screening between 2005 and 2009 has played a significant role (cf. Chapter 3.13). Apart from breast cancer, the age-standardised incidence rates in women have increased for malignant melanoma and for malignant tumours of the lung, thyroid, vulva, oral cavity and pharynx, yet only in the cases of lung cancer and vulvar carcinoma there was also an associated incre-

ase in mortality rates. Declining incidence and mortality rates were observed above all in cancers of the stomach, of the gall bladder and bile duct, the bowel and the ovaries, whilst in the case of breast cancer, carcinoma of the thyroid and malignant tumours of the uterus and cervix, as well as of the kidneys and the bladder, the mortality rate has fallen by at least 15 % despite incidence rates increasing or remaining constant.

In men, incidence rates since the year 2000 have only increased by more than 10 % for malignant melanoma, prostate cancer and carcinoma of the liver and only the latter showed an increase in mortality rate. Incidence and mortality rates declined significantly for malignant tumours of the stomach, lungs, larynx and bladder. The mortality rates also fell for cancers of the bowel, gall bladder, prostate and kidney.

In the last decade the age-standardised incidence rates for cancer among men have fallen by 17 % and in women by 11 %, somewhat greater reductions than in the European Union overall (13 % and 9 % respectively). The absolute number of deaths caused by cancer increased among men in Germany by around 8 % and remained largely unchanged in women.

Due to the demographic change, the median age at diagnosis for men has increased from 67 to 69 years, though the incidence rates among those over 70 years old have fallen slightly whilst increasing slightly in younger years. There tends to be a similar picture for women although the median age at diagnosis remains unchanged at 69.

Currently every second man (51 %) and 43 % of all women can be expected to develop cancer in the

course of their life. Every fourth man and every fifth woman dies of cancer. The relationship between cancer incidence and age varies between men and women. Women under the age of 55 years reveal higher incidence rates than men of the same age. In the higher age groups this relationship reverses. In the over 65 year age group the incidence rates among men are almost twice as high as those among women.

Cancer can occur in all kinds of organs in the body and can originate from different types of cell. The origin of most types of cancers are the internal or external body surfaces. Approximately 70 % are adenocarcinomas originating in glandular tissue. Around a further 15 % are squamous-cell carcinomas, malignant tumours of the transitional epithelium (urothelium carcinoma) and small-cell carcinoma, which occur for example in the lung. Alongside leukaemias and lymphomas, malignant tumours also have their origins, for example, in the support cells of the nervous system (glia cells) or under pigment-producing cells (melanomas). Rarer forms of cancer include those originating in connective tissue, such as mesothelioma and various sarcomas.

The relative 5-year survival rates range from above 90 % for malignant melanoma of the skin, testicular cancer, and now also prostate cancer, through to survival rates of less than 20 % for lung and oesophageal cancer. In the case of malignant tumours of the pancreas and mesothelioma, the relative 5-year survival rates are below 10 % (Figure 3.1.0). Compared to patient survival rates from the 1980s in Saarland (50 % to 53 % for women and 38 % to 40 % for men), the prognosis for cancer patients in Germany overall has improved considerably. Current estimations using the period method and only the most recent data show 5-year relative survival rates of 61 % for men and 67 % for women in patients diagnosed in 2009 and 2010. This means that the survival rates for both genders are converging overall. The improved overall cancer survival rates are due in part to shifts in the localisation spectrum, for example the decline in cases of stomach cancer and lung cancer among men (for which the prognoses are poor) and a larger proportion of colorectal, breast, and prostate cancer with better prognoses. The most obvious improvements in the survival rates of adult cancer patients over the last 25 years have been achieved in malignant tumours of the mammary gland, the bowel and the prostate.

### Risk factors and early detection

The aetiology of many cancers is not known, and in other cases, known risk factors cannot be influenced. Prevention strategies are therefore only available for a few tumour types. However, these include types of cancer which affect large numbers

of people. The World Health Organization estimates that more than 30 % of all cancer cases could be avoided with preventive measures.

Among avoidable risk factors, tobacco consumption is the most important. According to estimates by the Centre for Cancer Registry Data, a total of around 15 % of all cancer cases in Germany in 2008 were to be attributed to smoking. Also the roles of excess weight and lack of exercise have long been known from observational epidemiological investigations. Possible underlying biological mechanisms are becoming clearer due to the most recent research into the metabolic syndrome. This chronic “metabolic imbalance” is linked with hypertension, high blood cholesterol and hyperglycaemia. Inflammatory processes in adipose tissue are also suspected of being involved in the development of cancer.

Among individual nutrition-related factors, alcohol consumption plays an important role. Low quantities of fruit, vegetables, and dietary fibre, often combined with a high intake of red meat, have been identified as risk factors for a number of frequently occurring types of cancer. However it has not always been possible in observational studies to separate the influence of specific foodstuffs and their constituents from that of the energy balance.

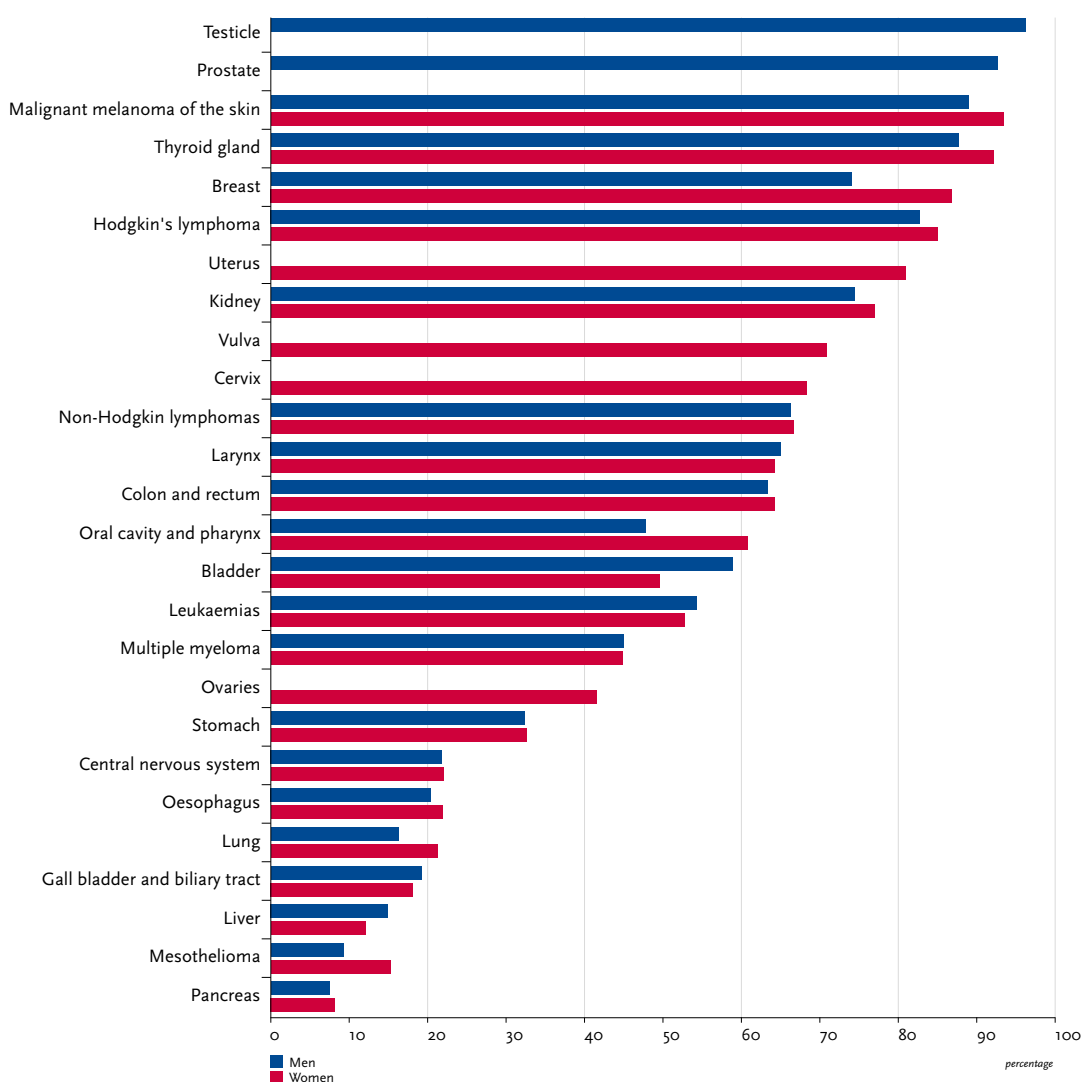
Also among the avoidable risk factors for developing cancer is the ultraviolet fraction of sunlight (UV radiation). Many people, particularly in Germany, overestimate the influence of hazardous substances and impurities in foodstuffs, as well as environmental factors or toxic exposure at the workplace. However, in certain individual cases these factors can also play a substantial role in the development of cancer, even here. Examples here are radon, the regionally occurring noble gas, which is thought to be responsible for up to nine per cent of lung cancer cases in Germany, or earlier occupational exposure to asbestos, which because of the long latency period is still causing mesothelioma of the pleura or peritoneum even today. Even medical procedures may impact on the cancer risk in individual cases. Potential risks include diagnostic procedures and therapies involving exposure to radiation, cytostatic agents used in chemotherapy, and hormone replacement therapy for menopausal women, which has been identified as a risk factor for breast cancer.

Chronic infections are now known to be risk factors for some widespread forms of cancer. Vaccinations or the treatment of causal factors can contribute to the reduction of cancer risk. This has been established for vaccinations against hepatitis viruses as a risk factor for liver cancer, and it is hoped that vaccination against human papilloma viruses will have a similar effect reducing the incidence rate for cervical carcinoma.

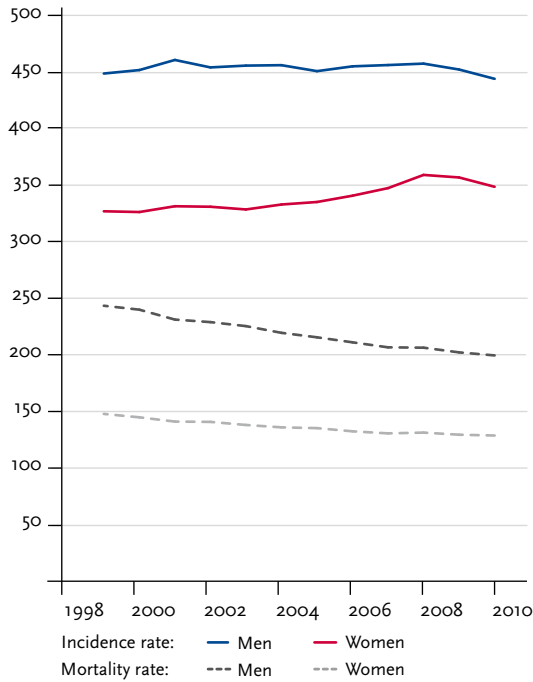
In addition to avoidable risk factors, genetic causes may also increase the risk of developing cancer. To date, however, only very few of these genetic mutations have been clearly identified. The respective relevant risk factors for specific types of cancer are presented in more detail in the individual sections.

The early detection programmes supported by the statutory health insurance companies in Germany screen for cancer of the skin and bowel, as well as breast and cervical cancer in women, and prostate cancer for men. These early detection measures are presented in the individual sections.

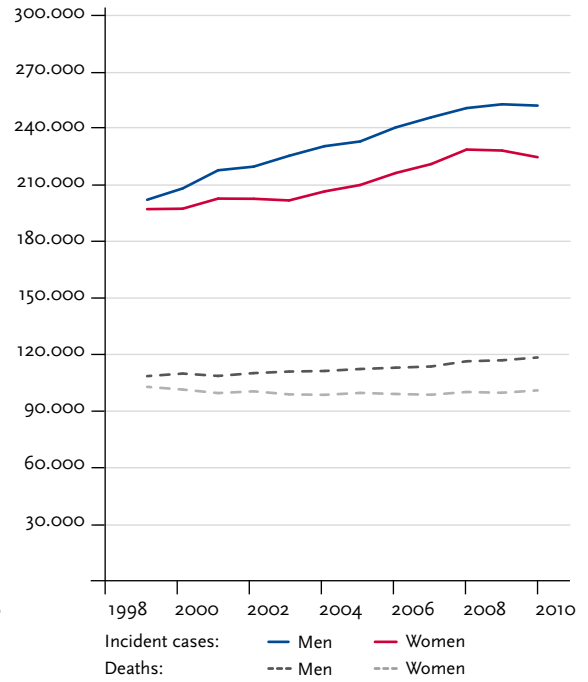
**Figure 3.1.0**  
Relative 5-year survival rates, by tumour site and sex, Germany 2009 – 2010 (period analysis)



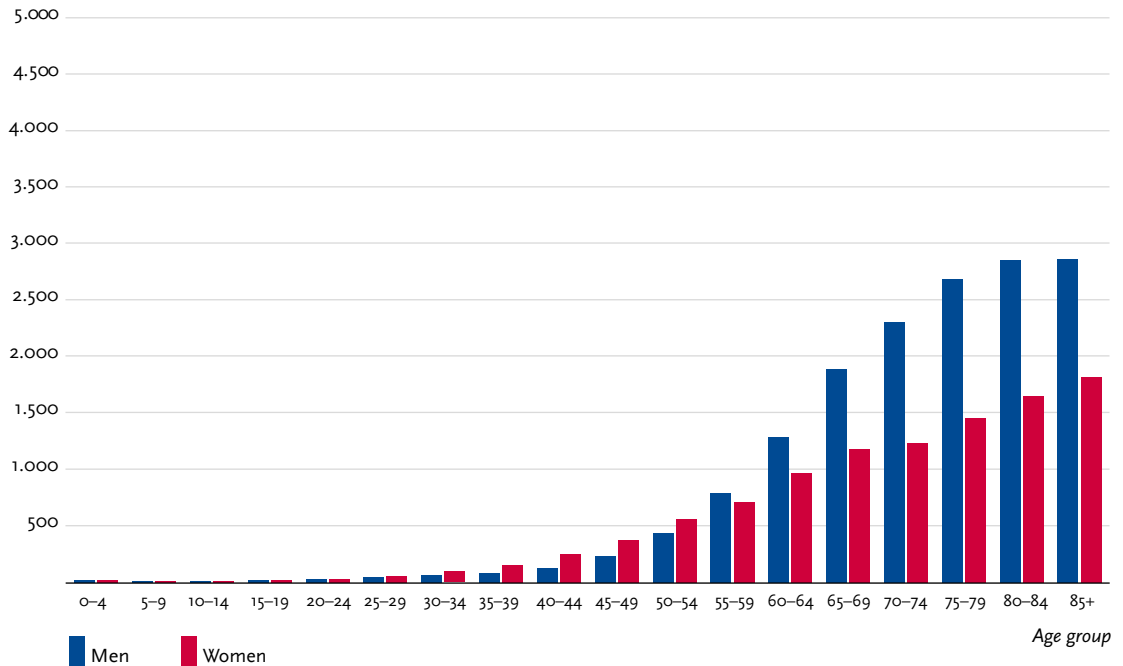
**Figure 3.1.1a**  
Age-standardised incidence and mortality rates, by sex,  
ICD-10 C00–C97 without C44, Germany 1999–2010  
per 100,000 (European standard)



**Figure 3.1.1b**  
Absolute numbers of incident cases and deaths, by sex,  
ICD-10 C00–C97 without C44, Germany 1999–2010



**Figure 3.1.2**  
Age-specific incidence rates by sex, ICD-10 C00–C97 without C44, Germany 2009–2010  
per 100,000

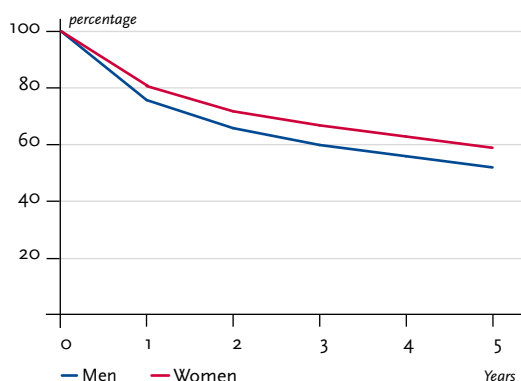


**Table 3.1.2**  
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C00 – C97 without C44, database 2010

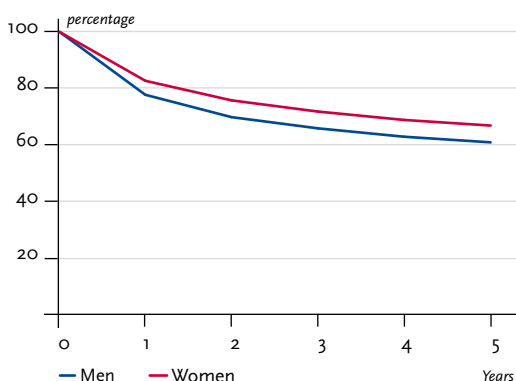
Men aged	Risk of developing cancer				Mortality risk			
	in the next ten years		ever		in the next ten years		ever	
35 years	1.2 %	(1 in 86)	51.0 %	(1 in 2)	0.3 %	(1 in 390)	26.1 %	(1 in 4)
45 years	3.5 %	(1 in 29)	51.0 %	(1 in 2)	1.2 %	(1 in 81)	26.2 %	(1 in 4)
55 years	10.5 %	(1 in 10)	50.6 %	(1 in 2)	3.8 %	(1 in 26)	26.0 %	(1 in 4)
65 years	21.0 %	(1 in 5)	47.9 %	(1 in 2)	8.0 %	(1 in 13)	24.6 %	(1 in 4)
75 years	27.6 %	(1 in 4)	40.4 %	(1 in 2)	12.9 %	(1 in 8)	21.1 %	(1 in 5)
Lifetime risk			50.8 %	(1 in 2)			25.8 %	(1 in 4)
Women aged	in the next ten years		ever		in the next ten years		ever	
35 years	2.1 %	(1 in 48)	42.5 %	(1 in 2)	0.3 %	(1 in 310)	20.3 %	(1 in 5)
45 years	4.8 %	(1 in 21)	41.5 %	(1 in 2)	1.1 %	(1 in 92)	20.1 %	(1 in 5)
55 years	8.8 %	(1 in 11)	39.0 %	(1 in 3)	2.6 %	(1 in 38)	19.4 %	(1 in 5)
65 years	13.0 %	(1 in 8)	34.0 %	(1 in 3)	4.9 %	(1 in 20)	17.7 %	(1 in 6)
75 years	16.2 %	(1 in 6)	26.1 %	(1 in 4)	8.1 %	(1 in 12)	14.6 %	(1 in 7)
Lifetime risk			42.9 %	(1 in 2)			20.2 %	(1 in 5)

**Figure 3.1.3**  
Distribution of T-stages at first diagnosis by sex  
Not included because tumour stages are site-specific.

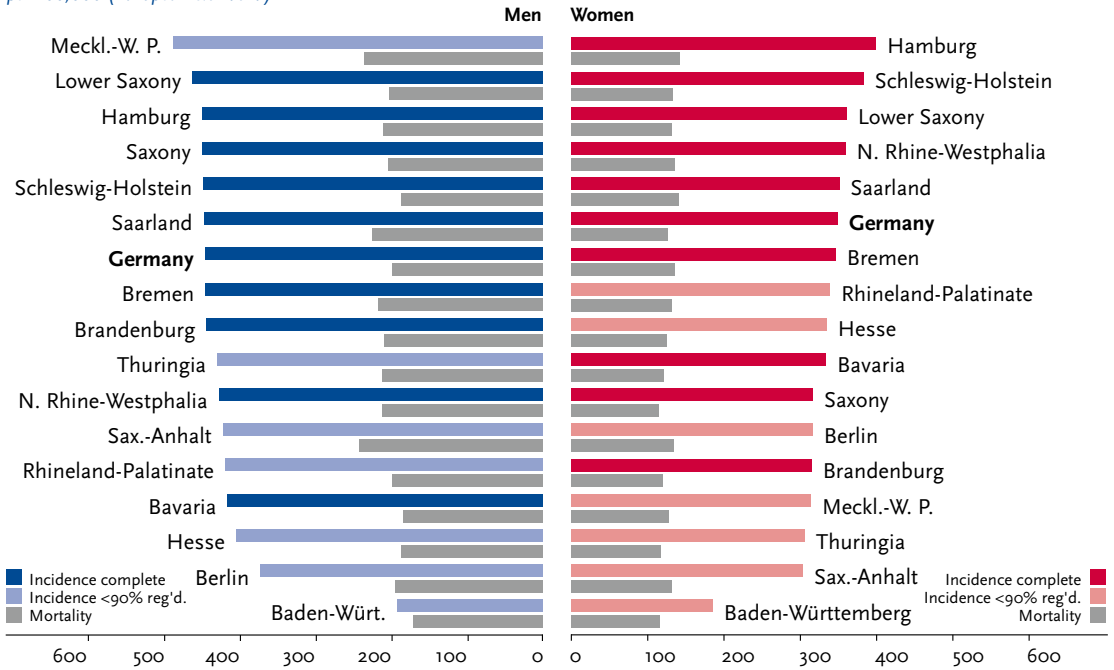
**Figure 3.1.4a**  
Absolute survival rates up to 5 years after first diagnosis,  
by sex, ICD-10 C00 – C97 without C44, Germany 2009 – 2010



**Figure 3.1.4b**  
Relative survival rates up to 5 years after first diagnosis,  
by sex, ICD-10 C00 – C97 without C44, Germany 2009 – 2010



**Figure 3.1.5**  
Registered age-standardised incidence and mortality rates in German federal states, by sex,  
ICD-10 C00–C97 without C44, 2009–2010  
per 100,000 (European standard)



**Figure 3.1.6**  
International comparison of age-standardised incidence and mortality rates, by sex,  
ICD-10 C00–C97 without C44, 2009–2010 or latest available year (details and sources, see appendix)  
per 100,000 (European standard)

